CLAIM AMENDMENTS

Claim Amendment Summary

Claims pending

- Before this Amendment: Claims 1-36.
- After this Amendment: Claims 1-36.

Non-Elected, Canceled, or Withdrawn claims: None.

Amended claims: 1, 10, 19, 28, and 31.

New claims: None.

Claims:

1.   **(Currently Amended)** A method implemented in a content distribution server, the method comprising:

decoding an enhancement layer bitstream without decoding using the content distribution server and an encoded base layer bitstream from a bitstream of encoded video data as the base layer is encoded, the encoded video data including [[an]] the encoded base layer and one or more encoded enhancement layers, the video data having been encoded according to a high HQRB (high quality reference bit-rate) that determines how many bits of the enhancement layer bitstream are used to reconstruct a high quality reference image;

determining data throughput characteristics of a content distribution network coupled to a client computing device using the content distribution server;

calculating a new HQRB based on a difference between the data throughput characteristics of the network and a bit rate of the encoded base layer in the bitstream of encoded video data using the content distribution server; [[and]]

encoding the decoded enhancement layer bitstream based on the new HQRB to generate a transcoded enhancement layer bitstream using the content distribution server; and

[[for]] streaming the transcoded enhancement layer bitstream to the client computing device using the content distribution server with the not decoded encoded base layer bitstream with encoding that is at least partially optimized for the throughput characteristics of the content distribution network.

2.   **(Previously Presented)** The method of claim 1, wherein the encoding substantially optimizes transcoded enhancement layer for streaming with the base layer across the network to the client computing device as compared to streaming of the encoded video data.

3.   (Previously Presented) The method of claim 1, wherein the encoded video data is encoded using progressive fine-granularity scalable (PFGS), MA-FGS, or RFGS encoding criteria.

4.   (Previously Presented) The method of claim 1, further comprising determining when the data throughput characteristics indicate a relatively low data throughput, and wherein calculating the new HRQB comprises:

encoding the decoded enhancement layer bitstream with the new HRQB having a bit rate lower than the high HRQB in response to the determining of a relatively low data throughput,.

5.   (Previously Presented) The method of claim 1, further comprising determining when the data throughput characteristics indicate a relatively high data throughput, and wherein calculating the new HRQB comprises:

encoding the decoded enhancement layer bitstream with the new HRQB having a bit rate the same or higher than the high HRQB in response to the determining of a relatively high data throughput.

6. **(Previously Presented)** The method of claim 1, wherein the encoding further comprises:

determining motion vector(s) from the base layer without decoding an entirety of a bitstream corresponding to the base-layer; and

encoding the enhancement layer bitstream with the determined motion vector(s) to generate the transcoded enhancement layer for streaming to the client computing device.

7. **(Previously Presented)** The method of claim 1, wherein the method further comprises streaming the transcoded enhancement layer and the base layer across the network to the client computing device.

8. **(Previously Presented)** The method of claim 1, wherein the method further comprises encoding video data to generate the one or more enhancement layers and the base layer.

9. **(Previously Presented)** The method of claim 1, wherein the method further comprises determining networking and/or video presentation capabilities of the client computing device, and wherein calculating the new HQRB further comprises formulating the new HQRB based on one or more of the networking and/or video presentation capabilities.

10.   (Currently Amended) A computer-readable memory storage device encoded with computer-executable instructions that, when executed by a processor in a content distribution server, implement operations comprising:

(a) decoding an enhancement layer bitstream ~~without decoding~~ using the processor and an encoded base layer bitstream from a bitstream of encoded video data as the base layer is encoded, the encoded video data including [[an]] the encoded base layer and one or more encoded enhancement layers, the video data having been encoded according to a high HQRB (high quality reference bit-rate) that determines how many bits of the enhancement layer bitstream are used to reconstruct a high quality reference image;

(b) determining data throughput characteristics of a content distribution network coupled to a client computing device and changes to the data throughput characteristics of the content distribution network using the processor;

(c) calculating a new HQRB based on the data throughput characteristics of the content distribution network and a bit rate of the encoded base layer in the bitstream of encoded video data using the processor, wherein the new, calculated HQRB is about equal to or less than the bandwidth used to deliver the unmodified, encoded, base layer; and

(d) encoding the decoded enhancement layer bitstream based on the new HQRB to generate a transcoded enhancement layer bitstream using the processor;

[[for]] streaming the transcoded enhancement layer bitstream to the client computing device using the content distribution server with the ~~not decoded~~ encoded base layer bitstream; and

(e) repeating (b) – (d) in response to changes in the data throughput characteristics of the network.

11. **(Previously Presented)** The computer-readable memory storage medium of

claim 10, wherein the computer-executable instructions for encoding substantially optimize transcoded enhancement layer for streaming with the base layer across the network to the client computing device.

12. **(Previously Presented)** The computer-readable memory storage medium of claim 10, wherein the encoded video data is encoded using progressive fine-granularity scalable (PFGS), MA-FGS, or RFGS encoding criteria.

13 **(Previously Presented)** The computer-readable memory storage medium of claim 10, wherein operations for calculating comprise operations,

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responsive to identifying a relatively low data throughput, for selecting the new HRQB to be lower than the high HRQB.

14.   **(Previously Presented)** The computer-readable memory storage medium of claim 10, wherein operations for calculating the new HRQB comprise operations, for selecting the new HRQB to be the same or higher than the high HRQB in response to identifying a relatively high data throughput.

15.   **(Previously Presented)** The computer-readable memory storage medium of claim 10, wherein operations for encoding comprise operations for determining motion vector(s) from the base layer without decoding an entirety of a bitstream corresponding to the base-layer, and for encoding the enhancement layer bitstream with the determined motion vector(s) to generate the transcoded enhancement layer for streaming to the client computing device.

16.   **(Previously Presented)** The computer-readable memory storage medium of Claim 10, wherein the operations further comprise operations for streaming the transcoded enhancement layer and the base layer across the network to the client computing device.

17. **(Previously Presented)** The computer-readable memory storage medium of claim 10, wherein the operations further comprise operations for encoding video data to generate the one or more enhancement layers and the base layer.

18. **(Previously Presented)** The computer-readable memory storage medium of claim 10, wherein the operations further comprising operations for determining networking and/or video presentation capabilities of the client computing device, and wherein calculating the new HQRB further comprises formulating the new HQRB based on one or more of the networking and/or video presentation capabilities.

19. **(Currently Amended)** A computing device of a content distribution server comprising a processor coupled to a memory, the memory being encoded with computer-program instructions executable by the processor to implement operations comprise:

        decoding an enhancement layer bitstream from a bitstream of encoded video data using the processor, the encoded video data including an encoded base layer as the base layer is encoded and one or more enhancement layers, the video data having been encoded according to a high HQRB (high

quality reference bit-rate) that determines how many bits of the enhancement layer bitstream are used to reconstruct a high quality image;

determining data throughput characteristics of a content distribution network coupled to a client computing device using the processor;

calculating a new HQRB based on a difference between the data throughput characteristics of the content distribution network and a bit rate of the encoded base layer in the bitstream of encoded video data using the processor;

encoding the decoded enhancement layer bitstream based on the new HQRB to generate a transcoded enhancement layer bitstream using the processor;

[[for]] streaming the transcoded enhancement layer bitstream to the client computing device; and

wherein the base layer is not decoded remains encoded for streaming to the client computing device and wherein the encoding is at least partially optimized for the data throughput characteristics of the content distribution network.

20. **(Previously Presented)** The computing device of claim 19, wherein the computer-executable instructions for encoding substantially optimizes transcoded enhancement layer for streaming with the base layer

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across the network to the client computing device as compared to streaming of the encoded video data.

21. (Previously Presented) The computing device of claim 19, wherein the encoded video data is encoded using progressive fine-granularity scalable (PFGS), MA-FGS, or RFGS encoding criteria.

22. (Previously Presented) The computing device of claim 19, wherein the data throughput characteristics indicate a relatively low data throughput, and wherein the operations for calculating the new HRQB further comprise operations, responsive to identifying the relatively low data throughput, for selecting the new HRQB to be lower than the high HRQB.

23. (Previously Presented) The computing device of claim 19, wherein the operations for calculating the new HRQB further comprise operations, responsive to identifying a relatively high data throughput, for selecting the new HRQB to be the same or higher than the high HRQB

24. (Previously Presented) The computing device of claim 19, wherein the operations for encoding further comprise operations for determining motion vector(s) from the base layer without decoding an entirety of a bitstream

corresponding to the base-layer; and operations for encoding the enhancement layer bitstream with the determined motion vector(s) to generate the transcoded enhancement layer for streaming to the client computing device.

25. **(Previously Presented)** The computing device of claim 19, wherein the operations further comprise operations for streaming the transcoded enhancement layer and the base layer across the network to the client computing device.

26. **(Previously Presented)** The computing device of claim 19, wherein the operations further comprise operations for encoding video data to generate the one or more enhancement layers and the base layer.

27. **(Previously Presented)** The computing device of claim 19, wherein the operations further comprise operations for determining networking and/or video presentation capabilities of the client computing device, and wherein calculating the new HQRB further comprises formulating the new HQRB based on one or more of the networking and/or video presentation capabilities.

28. (Currently Amended) A computer-readable memory storage device comprising processing means in a computer-readable storage medium, the processing means comprising:

means for decoding an enhancement layer bitstream from encoded video data ~~without decoding~~ using an encoded base layer bitstream from the encoded video data as the base layer is encoded, the encoded video data having [[an]] the encoded base layer and one or more encoded enhancement layers, the video data having been encoded according to a high HQRB (high quality reference bit-rate) that determines how many bits of the enhancement layer bitstream are used to reconstruct a high quality reference image;

means for determining data throughput characteristics of a content distribution network coupled to a client computing device;

means for calculating a new HQRB based on a difference between the data throughput characteristics of the content distribution network and a bit rate of the encoded base layer in the bitstream of encoded video data; [[and]]

means for encoding the decoded enhancement layer bitstream based on the new HQRB to generate a transcoded enhancement layer bitstream; and

[[for]] means for streaming the transcoded enhancement layer bitstream to the client computing device with the encoded base layer bitstream

wherein the encoding is at least partially optimized for the data throughput characteristics of the content distribution network.

29.   (Previously Presented) The computer-readable memory storage device of claim 28, wherein the means for encoding substantially optimizes transcoded enhancement layer for streaming with the base layer across the network to the client computing device as compared to streaming of the encoded video data.

30.   (Previously Presented) The computer-readable memory storage device of claim 28, wherein the encoded video data is encoded using progressive fine-granularity scalable (PFGS), MA-FGS, or RFGS encoding criteria.

31.   (Currently Amended) The ~~computing device~~ computer-readable memory storage device of claim 28, wherein the means for calculating the new HRQB further comprise, responsive to identifying a relatively low data throughput, means for selecting the new HRQB to be lower than the high HRQB.

32.   (Previously Presented) The computer-readable memory storage device of claim 28, wherein the means for calculating the new HRQB further

comprise means for selecting the new HRQB to be the same or higher than the high HRQB in response to identifying a relatively high data network throughput.

33.   (Previously Presented) The computer-readable memory storage device of claim 28, wherein the means for encoding comprises:

means for determining motion vector(s) from the base layer without decoding an entirety of a bitstream corresponding to the base-layer; and

means for encoding the enhancement layer bitstream with the determined motion vector(s) to generate the transcoded enhancement layer for streaming to the client computing device.

34.   (Previously Presented) The computer-readable memory storage device of claim 28, wherein the processing means comprise means for encoding video data to generate the one or more enhancement layers and the base layer.

35.   (Previously Presented) The computer-readable memory storage device of claim 28, wherein the processing means further comprise means for streaming the transcoded enhancement layer and the base layer across the network to the client computing device.

36. **(Previously Presented)** The computer-readable memory storage device of claim 28, wherein the processing means further comprise means for determining networking and/or video presentation capabilities of the client computing device, and wherein the means for calculating the new HQRB further comprises means for formulating the new HQRB based on one or more of the networking and/or video presentation capabilities.